WHAT IS CLAIMED IS:

1. A method of determining predisposition of an individual of Ashkenazi descent to prostate cancer, the method comprising determining a presence or absence of at least one nucleic acid sequence alteration in at least one allele of a RNASEL gene of the individual, wherein said presence of said at least one nucleic acid sequence alteration indicates predisposition to prostate cancer in the individual.

2. The method of claim 1, wherein said at least one nucleic acid sequence alteration is selected from the group consisting of:

(i) a deletion spanning nucleotides 471-474 of SEQ ID NO: 1;

(ii) a C to T substitution at nucleotide 354 of SEQ ID NO: 1; and

(iii) a deletion at nucleotide 11338427 of SEQ ID NO: 2.

3. The method of claim 1, wherein said presence or absence of said at least one nucleic acid sequence alteration is determined in samples isolated from blood, malignant tissue, amniotic fluid, or chorionic villi.

4. The method of claim 1, wherein determining said presence or absence of said at least one nucleic acid sequence alteration is effected by the use of oligonucleotide hybridization.

5. The method of claim 1, wherein determining said presence or absence of said at least one nucleic acid sequence alteration is effected by an assay selected from the group consisting of PCR, DNA sequencing and SSCP analysis.

6. A method of determining predisposition of a subject to prostate cancer, the method comprising determining a presence or absence of at least one nucleic acid sequence alteration in at least one allele of a RNASEL gene of an individual, said at least one nucleic acid sequence alteration being selected from the group consisting of:

(i) a deletion spanning nucleotides 471-474 of SEQ ID NO: 1;

(ii) a C to T substitution at nucleotide 354 of SEQ ID NO: 1; and

(iii) a deletion at nucleotide 11338427 of SEQ ID NO: 2,

wherein said presence of said at least one nucleic acid sequence alteration indicates predisposition to prostate cancer in the individual.

7. An oligonucleotide specifically hybridizable with a nucleic acid sequence alteration selected from the group consisting of:

(i) a deletion spanning nucleotides 471-474 of SEQ ID NO: 1;

(ii) a C to T substitution at nucleotide 354 of SEQ ID NO: 1; and

(iii) a deletion at nucleotide 11338427 of SEQ ID NO: 2.

8. The oligonucleotide of claim 7, wherein said oligonucleotide is hybridizable with SEQ ID NO: 1 under hybridization conditions of hybridization solution containing 10 % dextran sulfate, 1 M NaCl, 1 % SDS and 5 x 10^6 cpm ^{32}p labeled probe, at 65 °C, with a final wash solution of 1 x SSC and 0.1 % SDS and final wash at 50 °C.

9. The oligonucleotide of claim 7, wherein the oligonucleotide includes at least 10 nucleotides and no more than 50 nucleotides.

10. A kit for diagnosing prostate cancer or a predisposition to prostate cancer in a subject, the kit comprising the oligonucleotide of claim 7 and at least one reagent for detecting hybridization of the oligonucleotide with a nucleic acid sequence isolated from said subject.

11. The kit of claim 10, wherein said at least one reagent is selected suitable for detecting hybridization via an assay selected from the group consisting of PCR, RT-PCR, chip hybridization, RNase protection, in-situ hybridization, primer extension, Southern blot, Northern blot and dot blot analysis.

12. A method of treating a subject having, or being predisposed to, prostate cancer, the method comprising specifically downregulating in the subject expression of a mutated RNASEL transcript having at least one sequence alteration selected from the group consisting of:

(i) a deletion spanning nucleotides 471-474 of SEQ ID NO: 1;

(ii) a C to T substitution at nucleotide 354 of SEQ ID NO: 1; and

(iii) a deletion at nucleotide 11338427 of SEQ ID NO: 2,

thereby preventing the formation, or halting the progression of, prostate cancer in the subject.

13. The method of claim 12, wherein specifically downregulating expression of said mutated RNASEL in the subject is effected by administering to the subject an oligonucleotide capable of specifically inactivating said mutated RNASEL transcripts.

14. The method of claim 13, wherein said oligonucleotide is a single or double stranded polynucleotide.

15. The method of claim 13, wherein said oligonucleotide is at least 10 nucleotides long.

16. The method of claim 13, wherein said oligonucleotide is hybridizable in either sense or antisense orientation.

17. A method of determining sensitivity of a subject to prospective interferon therapy, the method comprises determining a presence or absence of at least one nucleic acid sequence alteration selected from the group consisting of a deletion spanning nucleotides 471-474 of SEQ ID NO: 1 and/or a deletion at nucleotide 11338427 of SEQ ID NO: 2, wherein said presence of said at least one sequence alteration indicates poor sensitivity of the subject to the prospective interferon therapy.

18. The method of claim 17, wherein said presence or absence of said at least one nucleic acid sequence alteration is determined in samples isolated from blood, amniotic fluid, or chorionic villi.

19. The method of claim 17, wherein determining said presence or absence of said at least one nucleic acid sequence alteration is effected by the use of oligonucleotide hybridization.

20. The method of claim 17, wherein determining said presence or absence of said at least one nucleic acid sequence alteration is effected by an assay selected from the group consisting of PCR, DNA sequencing and SSCP analysis.

21. An antibody or antibody fragment being capable of specifically binding at least a portion of amino acid residues 1-55 of an RNASEL polypeptide.

22. An antibody or antibody fragment being capable of specifically binding a polypeptide including an amino acid sequence set forth in SEQ ID NO: 41.

23. The antibody or antibody fragment of claim 22, wherein the antibody or antibody fragment is directed at said amino acid sequence set forth in SEQ ID NO: 41.

24. A kit for diagnosing prostate cancer or a predisposition to prostate cancer in a subject, the kit comprising the antibody or antibody fragment of claim 22 and at least one reagent for detecting binding of the antibody or antibody fragment to a polypeptide isolated from said subject.

25. The kit of claim 24, wherein detecting binding of the antibody or antibody fragment to said polypeptide is effected by an assay selected from the group consisting of immunohistochemistry, ELISA, RIA, Western blot analysis, FACS analysis, an immunofluorescence assay, and a light emission immunoassay.

26. The kit of claim 24, wherein said antibody or antibody fragment is coupled to an enzyme.

27. The kit of claim 24, wherein said antibody or antibody fragment is coupled to a detectable moiety selected from the group consisting of a chromogenic moiety, a fluorogenic moiety, a radioactive moiety and a light-emitting moiety.

28. A kit for diagnosing prostate cancer or a predisposition to prostate cancer in a subject, the kit comprising the antibody or antibody fragment of claim 23

and at least one reagent for detecting binding of the antibody or antibody fragment to a polypeptide isolated from said subject.

29. The kit of claim 28, wherein detecting binding of the antibody or antibody fragment to said polypeptide is effected by an assay selected from the group consisting of immunohistochemistry, ELISA, RIA, Western blot analysis, FACS analysis, an immunofluorescence assay, and a light emission immunoassay.

30. The kit of claim 28, wherein said antibody or antibody fragment is coupled to an enzyme.

31. The kit of claim 28, wherein said antibody or antibody fragment is coupled to a detectable moiety selected from the group consisting of a chromogenic moiety, a fluorogenic moiety, a radioactive moiety and a light-emitting moiety.

32. A method of determining predisposition of a subject to prostate cancer, the method comprising determining a presence or absence of at least one amino acid sequence alteration in an RNASEL polypeptide of an individual, said at least one amino acid sequence alteration being a translation product of:

(i) a deletion spanning nucleotides 471-474 of SEQ ID NO: 1; or

(ii) a deletion at nucleotide 11338427 of SEQ ID NO: 2,

wherein said presence of said at least one amino acid sequence alteration indicates predisposition to prostate cancer in the individual.